

A New Species of *Liacarus* (Acari: Oribatida: Liacaridae) from a Subalpine Coniferous Forest in Central Japan

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Abstract A new species of oribatid mite, *Liacarus kanekoi* sp. nov., collected from mosses growing on the rocks in a subalpine coniferous forest of Mt. Yatsugatake, Central Japan is described. The new species is distinguishable from other closely related species of *Liacarus* by the short interlamellar setae, long notogastral setae p_1 and relatively narrow anterior projection or median mucro between lamellar cusps.

Key words: Acari, Oribatida, *Liacarus*, new species, Japan

Introduction

In the course of taxonomic study on oribatid mites of Japan, an interesting species belonging to the genus *Liacarus* is found, and is described below as new to science.

The genus *Liacarus* MICHAEL is one of the largest groups of apterogasterine oribatid mites, and there are more than 80 known species with worldwide distribution. In Japan the genus is represented by 23 species (FUJIKAWA *et al.*, 1993; HIRAUCHI, 1998), and we add here one more new species, which collected from Shirokoma-ike, northern part of Mt. Yatsugatake in Nagano Prefecture.

Liacarus kanekoi sp. nov.

(Figs. 1–3)

Diagnosis. Large, dark species; lamellae relatively narrow, fused medially, with well developed anterior projection; lamellar cusps well developed, rounded at tip, rarely with minute inner teeth; rostral and lamellar setae long; interlamellar setae short, not reaching to the tip of lamellar cusps; sensilli fusiform, distal portion not elongated; notogastral setae p_1 relatively long, p_2 , p_3 and h_1

minute, but well visible; other notogastral setae very minute, difficult to observe except for their alveoli.

Measurements. Body length: 760–886 (812) μm ; length of notogaster: 616–736 (669) μm ; width of notogaster 472–552 (526) μm .

Integument. Integument nearly smooth and shiny in reflected light at low magnification, but at high magnification prodorsum, lateral part of podosoma and peripheral regions of ventral plate exhibit minute to large granulation. Notogaster with very weak striation (Fig. 3).

Prodorsum. Rostrum with two notches. Rostral seta (*ro*) long, about 72–80 μm in length, with minute and sparse barbs (Figs. 1A, 1B, 2A & 3A–C). Lamella relatively narrow, fused medially, striated. Lamellar cusp well developed, rounded at tip (Figs. 1B, C), but rarely with minute inner tooth (Fig. 2A). Translamella with a long, but narrow anterior projection (median mucro), which slightly extending beyond anterior end of lamellar cusp (direction of this projection is somewhat variable). Lamellar seta (*le*) longer than *ro*, about 92–96 μm , with minute and sparse barbs. Interlamellar seta (*in*) short, about 56–78 μm , not reaching to the anterior end of lamellar cusp (Figs. 3B, C). Bothridium (*bo*) completely covered by notogaster. Exobothridial seta not evident. Sensillus (*ss*) fusiform, its median part distinctly thick-

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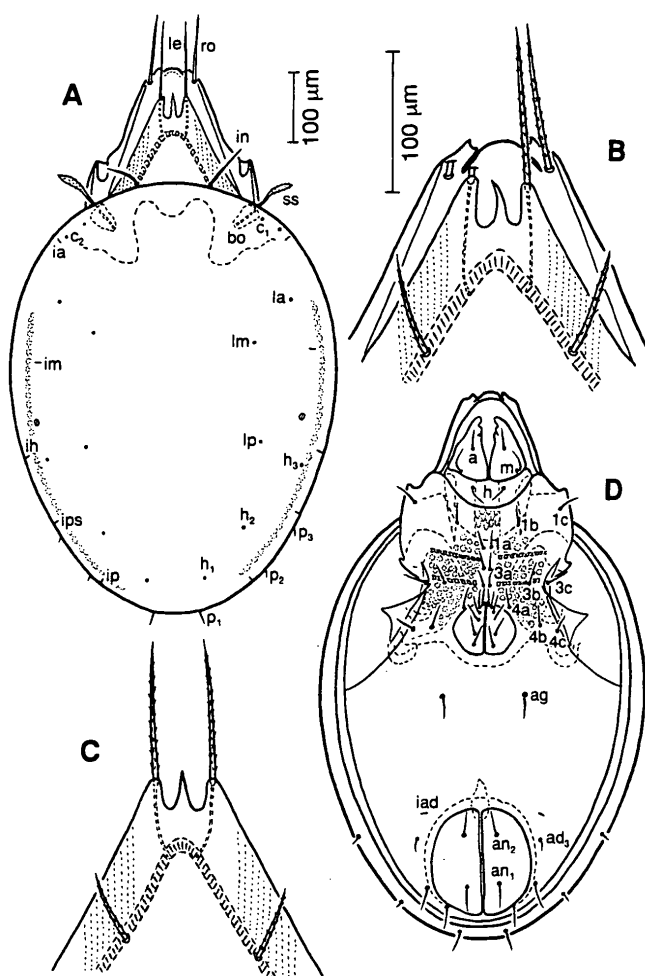


Fig. 1. *Liacarus kanekoi* sp. nov. A: Dorsal view; B: Anterior part of prodorsum, showing variation of median projection and structure of rostrum; C: Lamellae with rounded tip of cusps; D: Ventral view (the scales A and B are applicable to D and C, respectively).

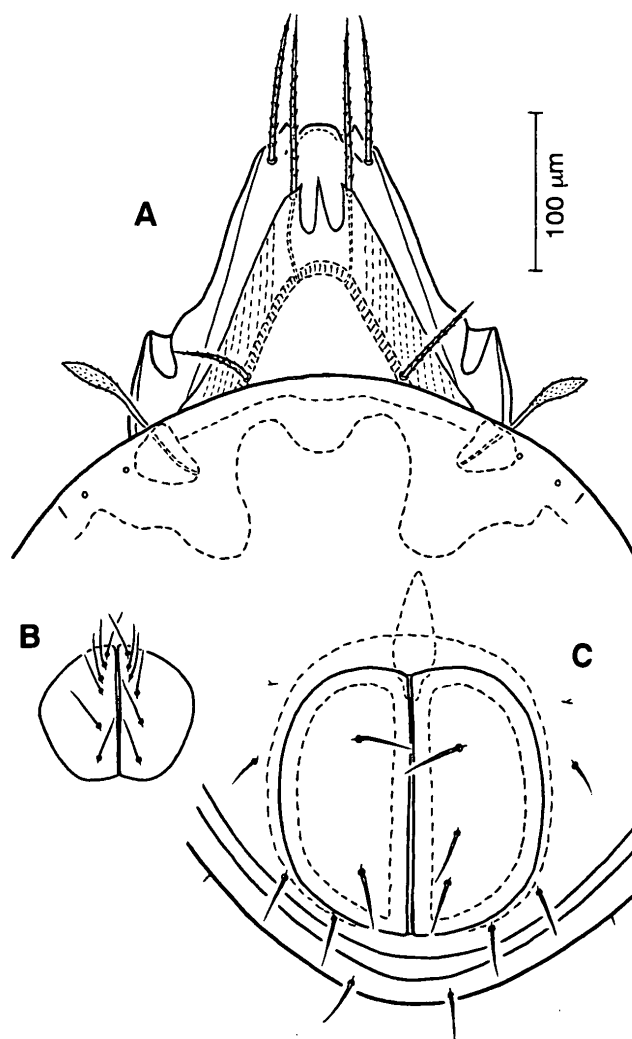


Fig. 2. *Liacarus kanekoi* sp. nov. A: Prodorsum and anterior part of notogaster (lamellar cusps with minute inner teeth); B: genital plates; C: Anal region (with asymmetric number of anal setae).

ened in a swollen portion, distal end not elongated (Figs. 1A, 2A & 3B).

Notogaster. Oval in shape and slightly narrowed posteriorly, its anterior margin broadly rounded, but posterior margin more or less narrowly rounded (Figs. 1A & 3A). Notogastral seta p_1 long enough to be easily detected (22–25 μm); setae p_2 , p_3 and h_1 minute (8–12 μm), but visible; other notogastral setae very minute, difficult to observe except for their alveoli (Figs. 1A, D & 3D). Lyrifissures ia , im , ih , ips , ip and opisthosomal gland opening (gla) well developed (Fig. 1A).

Epimeral region. Apodemes $apo.2$ and $apo.sj$ well developed, nearly transversely oriented. Epimeral setae moderately long, smooth; setal formula: 3–1–3–3. Custodium small, slightly projected anteriorly. Discidium

strongly projected distally; circumpedal carina well developed (Fig. 1D).

Ano-genital region. Genital aperture nearly rounded pentagonal, slightly wider than long (Figs. 1D & 2B). Genital plates with six pairs of moderately long, smooth setae. Aggenital seta also long and smooth. Anal aperture nearly round, slightly longer than wide (Figs. 1D & 2C). Anal and adanal setae moderately long; ad_3 slightly shorter than other setae (in one paratype ad_3 was similar in length to other adanal setae); seta ad_1 subequal in size with notogastral seta p_1 (Figs. 1D, 2C & 3D). Adanal lyrifissure (iad) situated anterior to seta ad_3 and oriented almost transversely (Fig. 1D). One of the paratypes has three setae on the right anal plate, but it is obviously abnormal character (Fig. 2C).

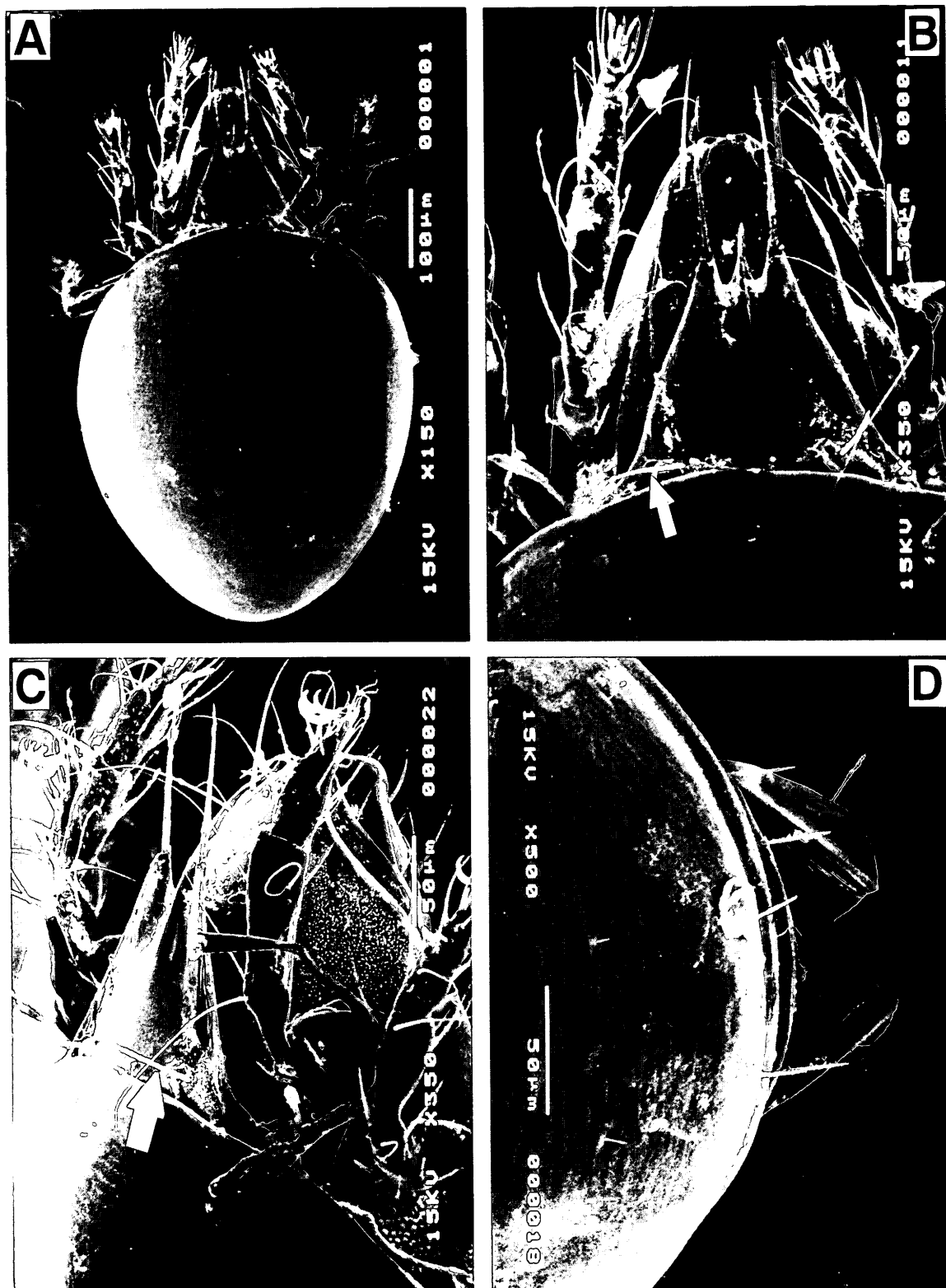


Fig. 3. *Liacarus kanekoi* sp. nov. Photos by scanning electron microscope. A: Dorsal view; B: Prodorsum and anterior part of notogaster; C: Lateral view of prodorsum; D: Posterior part of opisthosoma (Arrows in Figs. B and C show interlamellar setae).

Legs. Tarsi heterotridactylous, median claw with a few serration on its dorsal edge. Trochanters III, IV and femora I–IV with large porose areas. Distal setae of tarsi I–IV hooked distally. Setation of legs typical for genus.

Material examined. Holotype (male: NSMT-Ac 11204) and two paratypes (one female and one male: NSMT-Ac 11205, 11206): Shirakoma-ike, Mt. Yatsugatake, Nagano Prefecture, 2150 m a.s.l., mosses growing on the rocks in a subalpine coniferous forest (*Tsuga diversifolia* MAST. + *Abies veitchii* LINDL.), 6 November 1999, Col. B. BAYARTOGTOKH. The type series is deposited in the Acarology collection of the National Science Museum, Tokyo, Japan.

Remarks. *Liacarus kanekoi* sp. nov. can be easily differentiated from other known species of *Liacarus* in the short interlamellar setae, which are not reaching to the tip of lamellar cusps, the long notogastral setae p_1 , relatively narrow anterior projection between lamellar cusps and fusiform sensilli without an elongated tip.

The following known Japanese species *L. acutidens* AOKI, *L. arduus* FUJIKAWA and *L. yezoensis* FUJIKAWA & AOKI resemble the new species in the type of lamellae and sensilli.

However, the first species, *L. acutidens*, described by AOKI (1965) and redescribed by FUJIKAWA & AOKI (1970) is clearly distinguishable from *L. kanekoi* sp. nov. in 1) very long interlamellar setae, which are reaching to or extending beyond the anterior end of rostrum as opposed to the short setae in *L. kanekoi* sp. nov.; 2) short notogastral setae p_1 , which is shorter than p_2 and p_3 as opposed to the long seta p_1 in *L. kanekoi* sp. nov.; 3) the presence of well-developed notogastral setae c_1 as opposed to the vestigial ones in *L. kanekoi* sp. nov.; 4) the presence of only two setae on epimeral region IV as opposed to three setae in *L. kanekoi* sp. nov., and 5) larger body size.

The second species, *L. arduus*, described by FUJIKAWA (1989) is distinguishable from *L. kanekoi* sp. nov. by 1) very long lamellar and interlamellar setae; 2) relatively

wide lamellae and anterior projection between lamellar cusps; 3) long and narrow notogaster; 4) the presence of well-developed notogastral setae, and 5) much longer body size.

The last species, *L. yezoensis*, described by FUJIKAWA & AOKI (1970) from Hokkaido differs from *L. kanekoi* sp. nov. in 1) very long lamellar and interlamellar setae; 2) relatively wide lamellae; 3) short, but wide anterior projection between lamellar cusps, and 4) the presence of only two setae on the epimeral region IV.

Etymology. This species is dedicated to Dr. Nobuhiro KANEKO, Institute of Environmental Science and Technology, Yokohama National University, Yokohama, Japan, who kindly helped us during field studies and material collections.

摘 要

B. バイアルトグトホ・青木淳一（横浜国立大学環境科学研究センター）：中部日本の亜高山帯針葉樹林中から見出されたツヤタマゴダニ属の1新種（ササラダニ目：ツヤタマゴダニ科）。

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山梨県八ヶ岳の亜高山帯針葉樹林中の岩に生じたコケからササラダニ類の1新種が発見され、カネコツヤタマゴダニ *Liacarus kanekoi* sp. n. と命名し、記載した。本種は、桁間毛が短いこと、胴背毛 p_1 が長いこと、縦桁遊離棘の間にある中央突起が幅狭いことなどによって同属の他種から区別される。

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